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Army Transformation War Game:
Insights Concerning Space Operations

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By BG Richard V. Geraci

In April 2002, Army's Space and Missile Defense Command (SMDC) participated in the third Army Transformation War Game (ATWG) at the Army War College. These wargames have highlighted the importance of including "Space play" so that commanders understand how Space enables their ability to conduct full spectrum military operations. We have demonstrated that it is increasingly important to have Space-smart soldiers participating with fellow warfighters in wargames such as the ATWG, as well as exercises and experiments. Our participation in this wargame provided valuable insights into the growing role of Space operations across our transforming Army.

Insights from the ATWG indicate that transformation cannot succeed without leveraging Space capabilities. The Objective Force must see, understand, and act first — then finish decisively. Space systems, as a part of the Joint Information Architecture, will play a significant role in providing the requisite capabilities outlined in the battle command, precision fires, intelligence, surveillance, and reconnaissance, dominant maneuver, and sustainment concepts.

LTC Dave Reese, SMDC Force Development and Integration Center, and I wrote an article on the ATWG for publication in the February 2003 issue of Army Magazine. The insights in the Space operations arena are instructive enough that I want you to know about them, especially in light of our recent Army Space support to Operation Iraqi Freedom. Our insights at the ATWG will form the basis for investigating lessons learned. Below is an abbreviated version of that article focusing on Space operations. I encourage you to read the full article to understand the insights into Integrated Missile Defense and Information Operations.

Background

TRADOC designed ATWG to examine future global conflict and assess the strategic value of land power in a Joint, combined, and interagency context. ATWG also looked closely at the strategic role of the Army's post-Transformation, or Objective Force, units in a Joint context. In the game's strategic setting, U.S. forces were extended across a series of conflicts around the world, including the U.S. homeland. The game's scenario was set in the 2019-2020 timeframe — a period when proliferation of and access to Space technologies and capabilities among our potential adversaries is inevitable. Accordingly, aspects of these threats — and our ability to counter them — were incorporated into the game's design.

Realizing Desired Objective Force Characteristics

We want the Army's Objective Force of the future to be strategically responsive, deployable, agile, versatile, lethal, survivable, and sustainable. Attaining these qualities requires a thorough examination of the required technological, doctrinal, and organizational changes, as well as their interdependencies and political impacts. ATWG looked closely at these Objective Force concepts. Our conclusion was that decision superiority, much of it Space-enabled, will play a key role in realizing required Objective Force capabilities. Objective Force units will be smaller, lighter, and faster than their legacy force counterparts. Such characteristics are a prerequisite to a more deployable, agile, and sustainable force. Further, timely access to key information can multiply the effectiveness of Objective Force units, enabling them to become more lethal and survivable. For example, Intelligence, Surveillance, and Reconnaissance (ISR) information helps us to see, understand, and act first within the battlespace. Reliable computer networks that process and carry this information provide Objective Force units with a remote processing and reachback capability that enables smaller, more versatile forces that we can sustain more easily. Conversely, by denying enemy access to information and sensors we significantly reduce his capabilities.

Given that many of our adversaries will gain access to similar capabilities over time, we must be forward thinking about the need to plan and invest adequately in Army Space capabilities.

Space Operations and the Objective Force

The ATWG made clear that achieving Objective Force characteristics is highly dependent on Space operations. Space operations provide ISR, missile warning, position, navigation, and timing services, as well as communications, weather prediction, and Space control capabilities to the Objective Force. Space-based ISR is often the primary source of ISR information available during pre-hostility, early entry, or transition phases of operations. Our missile warning systems rely on Space-based sensors to detect launches and provide information necessary for friendly force warning and queuing radars of our air defense weapon systems. The Global Positioning System (GPS) provides information that enables accurate delivery of precision-guided munitions, tracking of friendly force locations, and a variety of other position, navigation, and timing-dependent capabilities. Satellite communications enable direct communications to remote areas, wide area or focused broadcast options, and a large capacity for message traffic, all without the need for ground relays. Weather satellites provide information critical to operational planning. Finally, Space control ensures our unimpeded access to Space systems while we simultaneously maintain a capability to selectively deny our adversaries use of, and access to Space.

ATWG Insights

Our Army cannot achieve the goals of Army Transformation without understanding Space operations and leveraging the capabilities they bring to the fight. Army requirements must be identified and integrated into the National Security Space priorities and receive appropriate funding.

As we plan a multi-decade transformation effort, other factors must be considered. First, our adversaries will eventually develop capabilities to counter or emulate many of our Space systems. Technology continues to advance, making access to these systems (and ways to counter them) more widely available. Commercial concerns today make a wide variety of Space-based imagery and communication services available to anyone able to pay for them. Second, our projected investments in Space may not be sufficient to enable the Objective Force portrayed in ATWG's 2020 scenario. Current acquisition programs are being designed to produce only a small number of Space control equipment suites by 2020.

Our experience at ATWG suggests that such constrained numbers will severely hamper our ability to conduct simultaneous Space control operations across large geographic areas in support of multiple combatant commanders. Other insights of note follow.

Space-Based ISR

Space-based ISR is a prerequisite to domination of the battlespace by the Objective Force. In many areas of the world, Space-based ISR will serve as the primary "eyes and ears" of future combatant commanders — particularly during early entry and other "transition" operations or periods. Satellite constellations of the Objective Force era will provide commanders with the all-weather, 24/7 view of the battlespace that commanders need to enhance situational awareness and optimize our chances for success.

Employing Elements of National Power

Space capabilities are critical to effectively employing all elements of national power. We've just discussed the importance of Space-based ISR to our military. The advantages of being able to monitor activities of our adversaries, particularly during pre-hostility periods, can be equally important to our political leadership and State Department. Similarly, our Commerce and Treasury Department officials can make more informed decisions with the aid of Space-based ISR related to crops, weather, port activity, or the status of key infrastructure within other nations. (Examples

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beyond ISR also exist.). During ATWG, our own dependence on Space created a lucrative, asymmetric target for the enemy. It will remain paramount for our leaders to be aware that loss of Space capabilities will degrade more than just our military operations.

Reachback Disruptions

The Objective Force relies heavily on being able to "reach back" to remote locations where a more extensive knowledge base of information, expertise or other capabilities exist. Secondary and tertiary effects of network disruptions (or attacks on CONUS-based reachback centers or Space ground stations) are generally not well understood. This year, game controllers determined these types of disruptions had significant worldwide impacts during ATWG. There is a critical need to recognize and prioritize protection of critical networks and Space-related infrastructure across theaters.

Navigation Warfare

GPS jamming will be significant on future battlefields and has the potential to extensively influence transition operations. We have grown increasingly reliant on GPS services to aid in the accomplishment of a variety of missions. Our military must remain proficient in conducting operations in a GPS-jammed environment. This type of navigation warfare must be considered as we evolve operational concepts and requirements for materiel development for Joint warfare.

Global Perspective is Key

Space Operations must be coordinated and applied with a global perspective across all theaters of operation. Space Operations have no logical geographical boundaries and can impact target areas much wider than those belonging to regional component commanders. We must continue to mature operational concepts for Space Operations with a global perspective.

Conclusion

The most recent ATWG examined and assessed Objective Force capabilities in a hypothetical worldwide crisis nearly two decades from now. Resulting findings and observations will be useful in making preliminary key decisions about refinements that may be required as we solidify Objective Force specifications. Our assessment indicates the Army cannot achieve its transformation goals or realize the Objective Force characteristics without Space-based capabilities. As we investigate Army Space operations in Iraqi Freedom, we'll also be able to confirm or refute these findings. Providing robust Space-based capabilities requires both a significant resource commitment and long lead times. Given that many of our adversaries will gain access to similar capabilities over time, we must be forward thinking about the need to plan and invest adequately in Army Space capabilities to ensure our Objective Force is a "full spectrum force, dominant at every point on the spectrum of operations."